RUST GEOTECH INC.

Spectral Gamma-Ray Borehole
Log Data Report

Borehole 51-14-08

Log Event A

Borehole Information

Farm : TX	**Tank :** TX-114	**Site Number :** 299-W15-116
N-Coord : 41,922	**W-Coord :** 75,886	**TOC Elevation :** 669.90
Water Level, ft :	**Date Drilled :** 9/30/1970	

Casing Record

Type : Steel-welded	Thickness : 0.280	ID, in. : 6
Top Depth, ft. : 0	Bottom Depth, ft. : 100	

Borehole Notes:
The driller's log does not mention perforating or grouting of this borehole; therefore, it is assumed that the borehole was not perforated or grouted. The casing thickness is presumed to be 0.280 in., on the basis of published thickness for schedule-40, 6-in. steel tubing.

Equipment Information

Logging System : 2	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 10/1995	**Calibration Reference :** GJPO-HAN-3	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number : 1	**Log Run Date :** 2/12/1996	**Logging Engineer:** Gary Lekvold
Start Depth, ft.: 98.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 50.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 2/12/1996	**Logging Engineer:** Gary Lekvold
Start Depth, ft.: 51.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 0.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 3	**Log Run Date :** 2/13/1996	**Logging Engineer:** Gary Lekvold
Start Depth, ft.: 50.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 40.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

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Analysis Information

Analyst : D.L. Parker

Data Processing Reference : P-GJPO-1787 Analysis Date : 1/2/1997

Analysis Notes :

This borehole was logged in three log runs with one section relogged for quality control. For log runs two and three, the pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and detector efficiency. The energy calibration and peak-shape calibration from these spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation. For log run one, the pre-survey verification spectra were lost and it is assumed that the spectra were accidently overwritten in the field. The post-survey field verification spectra met the acceptance criteria established for the peak shape and detector efficiency and were used in the analysis of data from the first log run.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The segment of the log between 40 and 50 ft was rerun for quality assurance purposes. The segment showed good repeatability. The depth of 50 ft was also relogged at the beginning of a log run and the third data point at this depth also showed good repeatability.

The only man-made radionuclide detected in this borehole was Cs-137. The presence of Cs-137 contamination was measured almost continuously from the ground surface to the bottom of the borehole. The maximum Cs-137 concentration was 9.9 pCi/g at 2.5 ft. Eight zones of interest were identified in the Cs-137 log. These zones of interest are from: 2 to 5 ft, 7 to 13 ft, 25 to 28 ft, 43 to 47 ft, 49.5 to 50.5 ft, 80 to 81 ft, and 96 to 98 ft.

A peak at 44 ft is very distinct and the concentrations increase from 0.4 pCi/g at 43 ft and then decrease to 0.3 pCi/g at 46 ft. Cs-137 contamination is also present at the bottom of the borehole.

Measurable K-40 concentrations increase at about 47 ft.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank TX-114.

Log Plot Notes:

Separate log plots show the man-made (Cs-137) and the naturally occurring radionuclides (KUT). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes both the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL, which represents the lowest concentration at which positive

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identification of a gamma-ray peak is statistically defensible.

A rerun plot was created for the region between 40 and 50 ft. The radionuclide concentrations were calculated using seperate data sets provided by the original and rerun logging runs.

A time-sequence plot of the historical gross gamma logs was created from historical gross gamma log data.